Feed the Future Innovation Lab
For *Collaborative Research on Nutrition* - Asia
Tufts University - Annual Report - Year 3

Feed the Future Innovation Lab

For Collaborative Research on Global Nutrition

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Annual Report
FY 2013 (Year 3)

Submitted by the Management Entity:
Friedman School of Nutrition Science and Policy
Tufts University
Boston

Feed the Future Innovation Lab
For Collaborative Research on Nutrition - Asia

Annual Report 2012/13 (FY 2013-Year 3)

Management Entity Information

Tufts University's Friedman School of Nutrition Science and Policy is the Management Entity for the Feed the Future Innovation Lab for Collaborative Research on Nutrition – Asia (hereafter called the Nutrition Innovation Lab – Asia). Its activities are funded under grant contract AID-OAA-L-1-00005 from the United States Agency for International Development (USAID).

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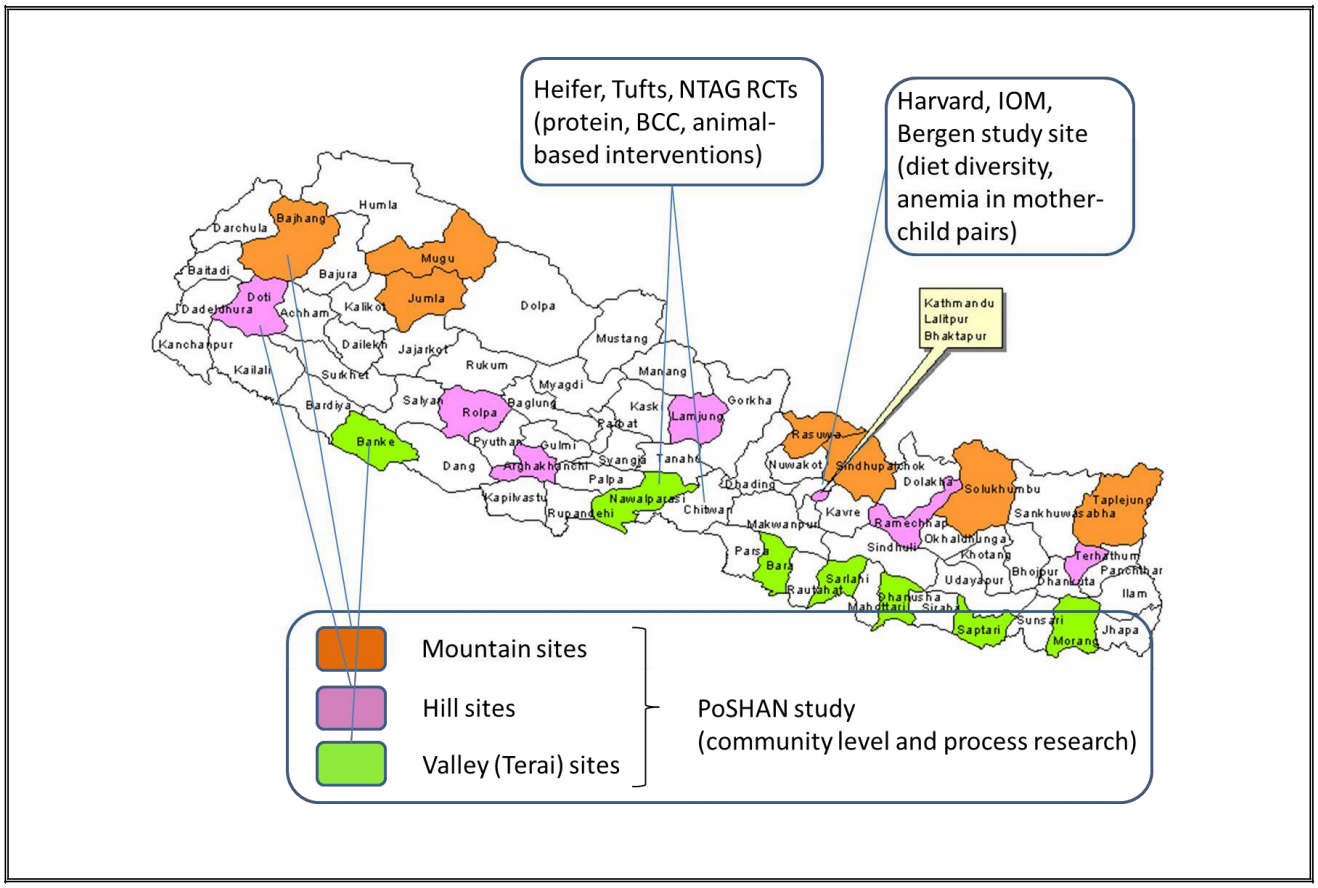
Radha Krishna Pradhan	Program Director	National Planning Commission
Kedar Baral	Vice Chancellor	Patan Academy of Health Sciences
Man Kumaru Rai	Faculty	Institute of Medicine
Indira Sharma	Faculty	Padma Kanya College
Aanya Sharma	Faculty	Nepal Medical College
Uma Koirala	Faculty	Tribhuvan University
Shushila Mala	Member	Nepal Nutrition Alliance
Kanti Lala Bhandari	Retired	N/A
Amit Bhandari	Retired	N/A
Representative	Government official	Ministry of Health and Population
Representative	Government official	Ministry of Local Development
Representative	Government official	Ministry of Education
Representative	Government official	Ministry of Physical Planning
Representative	Government official	Ministry of Agriculture and Cooperatives
Representative	Government official	Nepal Health Research Council

Map indicating main Nepal study sites



This map highlights the locations of a variety of interlinked studies that are framed by an overall research protocol. Twenty-one of the sites are the focus of a) community level research undertaken by Johns Hopkins University, with NTAG, the Institute of Medicine, the National Agriculture Research Council, and also b) policy process research led by Tufts University with Patan Academy of Health Sciences, Tribuvan University and Helen Keller International, with support from the Child Health Division of the Ministry of Health and Population. Several additional sites are the locus of complementary studies conducted by i) Harvard University (in collaboration with University of Bergen and the Institute of Medicine); ii) Heifer International (in collaboration with NTAG and Tufts), and *proposed* new research led by iii) Virginia Tech with the School of Veterinary Medicine of Chitwan Agricultural College, Heifer International and Tufts University, and iv) University of Georgia, with Tufts University.

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List of Program Partners

US Partners

- Johns Hopkins University
- Harvard University
- Purdue University
- Tuskegee University
- Boston University (informal partner)
- Virginia Tech University
- University of Georgia
- Development Alternatives, Inc. (DAI)
- International Food Policy Research Institute (IFPRI)
- National Aeronautical and Space Agency (NASA)

Nepal-based Partners

- Tribhuvan University/Institute of Medicine
- Patan Academy of Medical Sciences
- Nepali Technical Assistance Group (NTAG)
- Helen Keller International (HKI, Nepal)
- Save the Children/Nepal (USAID Suaahara program)
- Winrock International/Nepal (USAID KISAN program)
- National Agriculture Research Centre
- Heifer Nepal

Other international partners

- University of Bergen (Norway)
- LCIRAH (Leverhulme Centre for Integrated Research on Agriculture and Health -University of London)
- UNICEF
- Save the Children
- Heifer International
- AusAID
- University of Jakarta
- WorldFish (Bangladesh)

Acronyms

AusAID- Australian Agency for International Development
BBNC - Bangalore-Boston Nutrition Collaborative
BIFAD - Bureau for International Food, Agriculture and Development
DAI - Development Alternatives Inc.
GAIN - Global Alliance for Improved Nutrition
HKI - Helen Keller International
IFPRI - International Food Policy Research Institute
IOM - Institute of Medicine (Nepal)
LCIRAH- Leverhulme Centre for Integrated Research on Agriculture and Health (University College London)
NGO - Non-governmental agency
NASA - National Aeronautical and Space Agency
NTAG - Nepali Technical Assistance Group
UNICEF -United Nations Organization for Children
UN/SCN-United Nations Standing Committee on Nutrition
VaRG - Valley Research Group (Nepal)

I) Executive Summary

The Nutrition Innovation Lab seeks to discover how policy and program interventions can cost-effectively achieve large-scale improvements in maternal and child nutrition. Bringing together resources from host country and US institutions, the research and capacity building activities focus on operationally relevant work that supports national government priorities. During 2012/13, the Nutrition Innovation Lab's Asia-focused research and capacity-building was scaled up significantly, which involved formalizing relationships with numerous new institutional partners both in the US and globally (such as UNICEF, SPRING, NASA and Winrock).

In terms of primary data collection, a full round of surveys was completed during FY2013 at field sites across the country, focused on a) empirically documenting agriculture links to health and nutrition outcomes, and b) understanding the processes involved in implementing multisectoral actions for nutrition. Additional complementary field studies also continued, including one on diets and nutrition outcomes among mother-infant pairs followed since 2008, as well as a randomized control trial of livestock-based community interventions linked to enhanced nutrition knowledge, and a follow-up survey of a cohort of households previously interviewed from 2009 to 2011, to assess sustained impacts of multisector activities on diet diversity and child growth.

In addition to the above primary research, important secondary data analyses were conducted during FY2013. The main goal is to mine large nationally-representative datasets, combining otherwise separate sources of empirical data (such as unconnected agriculture, health, and consumption surveys), and pursuing cutting edge modeling that helps understand, for example, how agriculture productivity links to nutrition, how seasonality and climate variability interact with both agricultural output and nutrition (using NASA remote sensing), and how geography (agroecology, altitude, remoteness from markets) affect household outcomes.

Plans were prepared for new studies at the frontiers of agriculture and nutrition research, including proposed work on links between aflatoxin exposure (measured in the blood of women and children) and nutrition in Timor Leste, as well as a characterization of microbiome pathogens shared by livestock and their owners in rural Nepal. Discussion continues with USAID missions across the region on potential Associate Awards and other collaborative efforts that could include partners such as WorldFish, Horticulture Innovation Lab, and GAIN. There is hope that such plans may materialize in coming years.

Human and Institutional capacity building of many kinds also continues, with demand continuing to grow for a) assistance in curriculum development for graduate degree programs in nutrition (from the Institute of Medicine at Tribhuvan University, Patan Academy of Medical Sciences), b) methodological guidance on research and M&E around complex programs and policy initiatives (partnerships continue to build with many local and international non-governmental organizations implementing USAID programs, with USAID missions, and with global partners), and c) training and education of individuals at academic institutions in the region as well as in the US. A second Scientific Symposium was held in Nepal, for which attendance and visibility are rising.

II) Program Activities and Highlights

The Innovation Lab's research in Nepal went to scale during 2012/2013. A first full round of data collection was completed, with analysis underway:

i) Roughly 4,300 households (including 5,400 children under 5 years of age were surveyed in 21 of research sites by Johns Hopkins University (in collaboration with Tribhuvan University and the National Agriculture Research Centre of Nepal). That study focuses on empirically populating the pathways linking agriculture, nutrition and health in various agro-ecological contexts over time and seeking to understanding programming and policy fidelity where cross-sector interventions are implemented to achieve enhanced nutrition;

ii) An additional peri-urban site was the setting for Harvard University research (with Bergen University and Nepal's Institute of Medicine), aimed at retracing mother and infant pairs originally surveyed in 2008 to assess how diets and health have subsequently impacted anemia status and other manifestations of nutritional wellbeing. Around 350 of the original 500 pairs were included in the follow-up;

iii) The Innovation Lab also supported 2 more studies led by Heifer International in partnership with NTAG and Tufts University's School of Medicine. One takes the form of a randomized control trial of a livestock-based community intervention linked to enhanced nutrition knowledge. Seeking to understand impacts on child nutrition, communities were randomized to receive one of 3 interventions: 1) a range of community development activities, livestock training, and training in child nutrition (behavior change communication or BCC), 2) livestock training and nutrition training (BCC) alone, or (3) no intervention as a control group. A total of almost 1,000 households (containing more than 1,300 children under 5) make up the total sample, split roughly equally across the study arms. The other is a follow-up survey of a cohort of 389 (out of 415 originally surveyed) households in 3 districts (Nawalparasi, Chitwan, and Nuwakot) previously studied by Heifer from 2009 to
2011. The 4th year follow up allows for a longer period of assessment of rural development activities on health and nutrition (including dietary diversity and child growth).

In addition to these complex data collection efforts at individual, household and community levels, a matched research component has focused on understanding the process of program and policy implementation. Tufts University (collaborating with Patan Academy of Medical Sciences and the Institute of Medicine at Tribhuvan University) leads pioneering delivery science research that involves annual structured interviews with more than 750 policymakers and program implementers involved in agriculture-to-nutrition decision making, resource allocation and personnel management *associated with the same 21 research sites* as the Johns Hopkins study.
This will permit an empirical assessment of the extent to which knowledge, attitudes and practices of individuals and institutions charged with cross-sectoral collaboration for enhanced nutrition actually influence program and policy fidelity, as well as household-level outcomes observed on the ground.
Capacity building of various kinds continued, with demand outstripping resources to respond. A

second Scientific Symposium was conducted in Nepal, attracting 240 participants (compared with 150 last year). High visibility, strong participation of government (including the Secretary of Defense, permanent secretary of the Ministry of Health, and senior members of the National Planning Commission), as well as high caliber presentations by dozens of local researchers confirmed the strong catalyzing role played by the Innovation Lab in Nepal in promoting science and policy dialogue. Institutional enhancement was also pursued through curriculum development, local research support systems and raising the profile of local academic journal outlets. Individual capability building involved 14 people receiving short-term trainings and 6 engaged in graduate degrees. Forty two formal presentations were made by the many researchers involved in the innovation lab's activities, reaching an aggregate audience in FY2013 of almost 2400 people.

III) Key Accomplishments

Theme A (Scientific Research)

The first two targets identified under this theme were reached (see Table 1).

- The target number of **eight** Nepal-based institutions gained enhanced capacity in nutrition research, monitoring and surveillance methodologies, nutrition information systems, and/or nutrition interventions with USG assistance. The institutions comprise: i) the Ministry of Health's Child Health Division (with which the Nutrition Innovation Lab has a formal collaborative MOU), which gained from engagement in the overall research agenda as well as specifically in relation to substantive collaboration on the design of nutrition surveillance and information systems), ii/iii) two local survey organizations (Valley Research Group and New Era) which have both received high-end training and re-training in nutrition survey design, instrument preparation, study implementation and data entry/cleaning and analysis), iv) the Nepal Agriculture Research Council, v/vi) the local offices of Helen Keller International and Heifer Nepal, whose staff have been fully involved in Innovation Lab-supported nutrition survey design and analysis, vii) the Nepali Technical Assistance Group benefitted from further world class training in nutrition survey methods from Johns Hopkins University, while viii) the Patan Academy of Medical Sciences was directly involved in nutrition research (through PoSHAN) for the first time.

- The number of food consumption and/or nutrition surveys undertaken or reported on during FY13 totaled **six**, as anticipated. In one sense, this number under-represents the huge amount of work undertaken by Johns Hopkins University for the i) PoSHAN community level research since they organized data collection in 21 separate field sites spread out across the country, and these could easily be counted as 21 individual surveys given the logistics, training and implementation challenges presented by each. In addition, further training and data collection was initiated at the 3 PoSHAN ii) Sentinel Sites. Thus, the PoSHAN activity can, in reality, be seen as having completed 24 individual surveys. Separately located from the PoSHAN sites were iii) the study undertaken by the Nepal Institute of Medicine in collaboration with Harvard University and the University of Bergen, Norway, iv) two separate studies implemented by Heifer with NTAG collaboration, and v) the PoSHAN process research, which focuses on understanding the policy and programming delivery constraints to improved nutrition impact.

Table 1: Nutrition Innovation Lab Asia Targets and Achievements (FY2013)

Theme (a): Scientific Research				
Outcomes	**Indicator Number**	**Output Indicators**	**FY 2013 Targets**	**FY 2013 Actuals**
Outcome 1: Improved host country nutrition and food security monitoring, analytics and surveillance capacities	N/CRSP 1	Number of U.S. and host country institutions that have gained enhance capacity in nutrition research, monitoring and surveillance methodologies, nutrition information systems, and/or nutrition interventions with USG assistance	8	8
	N/CRSP 2	Number of food consumption and/or nutrition surveys undertaken, or reported on and disseminated	6	6
	N/CRSP 3	Number of U.S. or host country institutions or individuals having completed a nutrition assessment, survey or gap analysis.	15	23[i]
Theme (b): Human and Institutional Capacity Development				
Outcomes	**Indicator Number**	**Output Indicators**	**FY 2013 Targets**	**FY 2013 Actuals**
Outcome 2: Improved host country academic, technical and research capacity in nutrition, health and agriculture	N/CRSP 4	Number of people trained in child health and nutrition (nutrition science, dietetics, public health nutrition) through USG supported programs (longer term – graduate school)	2	5 (2 men/3 women)[ii]
	N/CRSP 5	Number of people trained in child health and nutrition (nutrition science, dietetics, public health nutrition) through USG supported programs (short term – trainings, workshops)	69	14 (5women/ 9 men)[iii]
	N/CRSP 6	Number of US and host country institutions with enhanced capacity to assess, plan, design, implement, monitor and/or evaluate nutrition programs, policies and practices	6	9[iv]
	N/CRSP 7	Number of U.S. and host country *institutions and individuals* who have gained enhanced capacity in clinical, operational, agricultural, translational and/or public health nutrition research aimed at the reduction of malnutrition with USG assistance	30	31
	N/CRSP 8	Number of peer-reviewed journal articles co-authored with host countr institutions and others in country with USG assistance (submitted or published)	2	10[v]
	N/CRSP 9	Number of brief articles and presentations co-authored with host country institutions and others in country with USG assistance	10	10

[i] Indicator No. 3. Target exceeded. The number of individuals completing surveys, gap analyses or assessments was larger than anticipated because it became possible to implement more study elements than expected (a second Heifer study, an extra round of IOM/Harvard/Bergen data collection, and early implementation of the PoSHAN community research Sentinel Sites).
[ii] Indicator No. 4. The number of students admitted exceeded the target because we were able to train more students at Tufts who applied to our policy programs and Tuskegee University added another graduate student from Nepal for this year.
[iii] Indicator No. 5. Target not met because our curriculum development training and meeting did not take place with IOM and Tribhuvan University. Our counterparts requested a delay in meeting regarding the curriculum development of a Master's program until next year. We estimated that the session would have included 55 colleagues.
[iv] Indicator 6. Target exceeded because we were able to secure collaborations with IOM, Heifer, and CHD which we did not anticipate as soon as this year.
[v] Indicator 8. Target exceeded because our ME team and partners authored/submitted more papers than anticipated.

- Third, the number of U.S. or host country institutions or individuals having completed a nutrition assessment, survey or gap analysis exceeded the target set (26 versus 15). Those **twenty-six** individuals include the 3 Nepali co-principal investigators collaborating directly with the nutrition innovation lab agenda, the 3 principals at Valley Research Group who participated in study design discussions, trainings, data collection management and data entry for the PoSHAN process research, the 2 study leads of the Heifer Nepal research, the 3 Institute of Medicine/Harvard/Bergen principal investigators, 3 senior staff of the Nepal Technical Advisory group who have been engaged in both the PoSHAN community studies and the Heifer studies, 3 individuals at Purdue University who have focused on secondary data analysis linking agriculture, climate change and nutrition (leading to assessments of correlations, gaps in empirical knowledge, etc.), 6 individuals leading the PoSHAN community level research (3 from Johns Hopkins and 3 local staff managers recruited and trained to oversee the establishment of Sentinel site data collection), as well as 3 individuals from Tufts who designed and implemented the first round of PoSHAN process data collection.

While data collection from those activities has been undertaken, and analyses are underway, a number of research papers and presentations were completed as planned during FY13.

- *Research papers* – **ten publishable papers**, some in Working Paper format posted on the innovation lab website and some already formally submitted for publication (for example, to the Food and Nutrition Bulletin, the Annals of the New York Academy of Sciences, and the British Journal of Nutrition). In addition, a consolidated research protocol document was widely distributed, garnering considerable attention as a model for 'framing' agriculture-to-nutrition research of this kind.

- *Dissemination of research findings* and discussion of metrics and conceptual pathways relevant to Feed the Future programming. **Twenty presentations** were made during FY13 by Nutrition Innovation Lab collaborators (including local partners) in high-impact venues: seven at meetings organized by or for USAID/DC; one at the 3rd annual conference on integrating agriculture and health metrics in London, two at the American Agriculture Economics Association annual meeting in Washington, D.C.; two at the 2nd annual Scientific Symposium in Kathmandu; five at the International Congress on Nutrition in Spain; and three at the Science Forum in Germany.

Theme B (Human and Institutional capacity-building) The Nutrition Innovation Lab's commitment to capacity building (improving host country academic, technical and research capacity in nutrition health and agriculture) was further strengthened through formal Board adoption of selection criteria for candidates seeking training support. All FY13 targets were met (Table 1 above).

- A Memorandum of Understanding was formalized with Nepal's Institute of Medicine/Tribhuvan University to guide support for i) curriculum development appropriate to bridging disciplines, ii) editorial support for the Journal of the Institute of Medicine, and collaboration around raising standards and visibility of this journal, iii) establishing a process for seed-funding of local student field research through small

matching grants (where studies focus on the intersections among health, nutrition and food security or agriculture), and iv) training and participation in field level studies. A similar MOU is under preparation with the Patan Academy of Medical Sciences, for signature during FY14.

- Some aspects of capacity-building involve the sharing of ideas, research agendas and protocols, as well as preliminary findings to targeted audiences where the innovation lab's work can gain visibility and have impact on the global dialogue, influence research directions, and enhance stakeholder understanding of key issues. In this context, nutrition lab researchers made **42 presentations** during FY2013 in a range of impactful venues. These are summarized in Appendix 2. Some were presentations co-authored with Nepali colleagues, others were individual efforts by the ME, US partners as well as Nepali partners. **The total (aggregate) audience participating in these presentations came to about 2,400 people—representing individuals directly exposed to new thinking and findings generated by the Nutrition Innovation Lab's activities**.

- In terms of the capacity building of individuals (through formal education and training programs), the innovation lab for Asia supported 14 people with short-term trainings (at the Bangalore-Boston Nutrition Collaborative activity in India), and another 6 in graduate programs in the United States.

IV) Research Program Overview and Structure

The Feed the Future Innovation Lab for Collaborative Research on Nutrition (Asia) offers a model for focusing research on food and nutrition in developing countries in line with recommendations from the recent BIFAD external review of funding modalities for US university research.[1] Thate report notes that the exceptional capacity of the US research community is best leveraged to achieve international development goals when working in a "collaborative, interdisciplinary and development-focused" manner with national institutions on research questions that resonate both at global and local levels (BIFAD 2012, p.9). That perfectly describes the modus operandi of the Nutrition Innovation Labs, including:

- A 'deep-dive' focus of research in *Feed the Future* priority countries,
- An applied focus (operations or 'delivery science' research rather than bench science),
- A focus on country-ownership (supporting research that includes national stakeholders and informs locally-defined priorities in food and nutrition),
- Resources are allocated to few grants at larger scale, rather than many small grants supporting studies of experimental or pilot activities,
- Institutional and human capacities for analysis and policy formulation developed through a mix of formal education (degree programs), short-term training activities, workshops and engagement of local partners in national scientific symposia.

[1] BIFAD (2012). *BIFAD Review of the Collaborative Research Support Program (CRSP) Model*. A Report Commissioned By BIFAD at the Request of USAID. August 2012. Washington, D.C., Mimeo.

Following these principles, the Nutrition Innovation Labs focus on over-arching research questions: namely, 1) How can investments in agriculture achieve significant measurable impacts in nutrition (can pathways to impact be empirically demonstrated)? 2) How can large-scale programs best incorporate such knowledge into cost-effective multi-sectoral interventions aimed at improving nutrition? And 3) How can policy and program implementation processes be enhanced to support both nutrition-specific and nutrition-sensitive actions?

These overarching questions frame a series of nested studies that seek to generate empirical evidence responding to developing country policymaker concerns, while supporting the goals of the Feed the Future initiative. There is still very limited empirical evidence to support the assumption that higher productivity and diversity of agricultural outputs supports enhanced maternal and child nutrition outcomes. Therefore, the Innovation Lab undertakes applied research to determine the effectiveness of various approaches to linking agriculture and nutrition in diverse agro-ecological contexts. The research is pursued in ways that seek to enhance policymaker understanding of how to overcome constraints in policy and program design and implementation, while also producing global public goods in the form of new scientific knowledge of relevant and diverse settings.

Tufts University's Friedman School of Nutrition Science and Policy serves as the Management Entity for the Nutrition Innovation Lab for Asia (as well as that for Africa, which allows for intellectual synergies and cost-savings to both programs). The Friedman School implements the program of work in partnership with several US university partners – Tuskegee, Purdue, Johns Hopkins, and Harvard – as well as Development Alternatives, Inc. The core team manages resources in a manner that allow for the generation of i) empirical evidence of what works in leveraging agriculture for improved nutrition through multi-sector programming, and ii) enhanced institutional and human capacity in Asia to conduct research and implement integrated Nutrition activities in future years. Additional US universities (Virginia Tech and University of Georgia), and European universities (Bergen in Norway and University College London), have also become partners during 2012/2013 as new initiatives have emerged. In all cases, close collaboration is ensured with host country partners, including Tribhuvan University, Nepal's Institute of Medicine, Patan Academy of Medical Sciences, the Nepal Agriculture Research Council, the Child Health Division of the Ministry of Health and Population and the National Planning Commission.

A consolidated research protocol was prepared in 2013 to explain how the seemingly disparate elements are conceptually linked.[2] Some aspects of the research are further along than others, and some are much larger than others, but each is an essential component of the research activity.

[2] Webb P, Ghosh S, Kennedy E, West K, Klemm R, Sapkota D, Manohar S, and Griffiths J. 2013, *Research in Asia: Approach, Methods and Protocols*. Feed the Future Innovation Lab for Collaborative Research on Nutrition. Tufts University, Boston (last updated November 5th, 2013) – at http://www.nutritioninnovationlab.org/asia/research/

V) Research Project Reports

V.1.1 *PoSHAN Community Nutrition Research.* **The goal is to empirically understand pathways by which interventions in agriculture impact on nutrition, and how such pathways can be enhanced through appropriately designed multisector interventions**.

FY13 saw the finalization of data collection instruments, pre-testing of tools and revisions to questionnaires was completed, leading to submission for ethics review by the Nepal Health Research Council. This was obtained, as well as formal approval from the Johns Hopkins and Tufts IRBs. The approved instruments were used during 4 weeks' training of more than 90 data collectors in collaboration with local research firm, New ERA. Field surveys started in May 2013 for first annual survey in 21 districts across Nepal. Data collection for the first panel round was completed in August 2013. Quality assurance visits to more than 15 districts were completed by Nutrition Innovation Lab/JHU staff and to all districts by New ERA staff.

By the end of FY2013, preliminary data had been cleaned and reviewed and frequency distributions completed. One sentinel VDC (3 wards in each) was selected from each of three zones (mountains, hills and terai), using census and other Bureau of Statistics data for population density, demographics and socioeconomic factors. The VDCs which most closely approximate the median of these distributions in each zone, considering access, was identified as the sentinel site in the zone. The sites finally selected were: Mahatgaun (Jumla), Sitapur (Arghakanchi) and Saigaun (Banke). Ongoing, intra-annual data collection will be established in these sites during FY2014.

Challenges have been many. Conducting a nation-wide study across diverse terrains just before and during the monsoon season was logistically difficult. The size of the study also warranted a large staff of data collectors. Training and standardizing data collectors (especially standardizing anthropometric measurements) was not easy across almost 100 individuals. Mandating structure, quality and providing detailed and specific instructions for training, data management and quality control procedures was crucial. Delays occurred as a result of this. However, quality of data and structure of the project was maintained. (For more detail see the Johns Hopkins Partner Report).

V.1.2 *PoSHAN Policy Process Research.* **The goal is to empirically determine how approaches to collaboration and the 'quality' of policy implementation (determined through the knowledge, attitudes and practices of stakeholders involved in implementing multisector policies and actions), may impact agriculture, health and nutrition outcomes on the ground.**

Much effort has been dedicated to conceptualizing pathways from agriculture to nutrition. Research in many countries currently focuses on design issues relating to complex multisector programming. However, much less attention has been paid to the role of policy implementation across ministries and sectors, and the potential for assessing fidelity of governance as a contributor to program outcomes. This aspect of the research is collecting unique primary data derived from interviews with policymakers at all levels of governance in Nepal. During FY2013, roughly 750 officials in government and non-governmental stakeholders were interviewed across Nepal by Valley Research Group, Tufts and Patan Academy of Health Sciences researchers. Using mixed methods, the PoSHAN process research used structured and semi-structured survey instruments to interview policymakers and other stakeholders across eight sectors of activity

relevant to the implementation of a national multi-sector nutrition plan: namely, agriculture (cropping and livestock separately), health, nutrition, water supply, sanitation, local development, other social welfare. Government officials in each of these line ministerial functions were identified at each of 6 defined 'layers' of governance (national, regional, district, ilaka, village development committee and ward), and interviewed in relation to their responsibility for the flow of decisions and resources relevant to actions on the ground in the same 21 field sites in which community-level data are being collected by Johns Hopkins.

Additional non-governmental stakeholders working on agriculture and nutrition programming were also interviewed at each layer and location. The goal, during FY 2014, is to combine these dataset to permit analysis of potential correlations between the 'quality' of governance relating to policy implementation, its relationship (if any) to programming fidelity on the ground, and ultimately to nutrition and health outcomes among households where policies and programs have been targeted. Multilevel modeling will be explored, as well as the creation of novel indices of policy implementation fidelity and institutional readiness for change where complex multisectoral interventions are concerned.

The first full round of data collection was completed during the early summer of 2013, with data cleaning completed at the end of FY2013. The challenges involved in collecting these data were similar to those met at the community level—logistical hurdles, language problems, difficulties in ensuring adequate training of enumerators unused to semi-structured survey instruments, appropriate coding and entry of data. These were successfully overcome through great personal effort of all involved, as well as excellent top-level supervision and quality control from the many senior researchers (Nepali as well as international) committed to the activity. Preliminary analysis of the data started as cleaned files became available, and revision of instruments ready for FY2014 ethics review board clearance has also already begun. The second round of data collection is expected to take place in the same period of 2014 (late spring/early summer).

V.1.3 *Randomized control trial of impact on nutrition of specific behavior change communication (BCC) layered over a livestock training intervention*. **The goal of this study is to determine the value-added of specific nutrition knowledge over and above enhanced knowledge in agriculture (livestock management).**

Initiated in early 2013 in one district of Nepal, is to investigate child health and nutrition in communities randomized to receive one of three interventions: (1) Heifer community development activities and livestock training, supplemented by specific training in child nutrition, (2) livestock training and nutrition training alone, or (3) no activities. During FY2013, the precise nutrition 'curriculum' for BCC was devised and tested, the survey instruments were developed, interviewers were trained, and ethics review approval was secured. Data collection took place during the early summer without any problems. A total of 960 households were enrolled in the study - 289 assigned to livestock training plus nutrition training; 360 assigned to livestock training only; and 304 assigned to the control group. All households have one or more children under 5, resulting in a total sample of approximately 1,300 children enrolled across the 3 study arms. Data entry and cleaning was initiated during the summer, and preliminary data will be available early

in FY2014, leading to presentations and papers. A second round of data collection with then be planned for the same individuals.

V.1.4 *Randomized control trial of multisector interventions framed by livestock development interventions on child nutrition outcomes*. **The goal is to understand how interventions framed around animal use and women's empowerment, a) enhance child dietary quality overall (through direct consumption and/or increased income), and b) animal source food consumption specifically**.

Led by Heifer International Nepal and the Nepali Technical Assistance Group, this study examines how measures of dietary diversity correlate with child nutrition outcomes. Designed as a randomized control trial, the study explores associations in the context of an intervention trial in three sets of paired communities in Nepal. Communities were randomly assigned to "control" or "intervention" status. Surveys were completed in 415 randomly selected households at baseline and every 6 months for 2 years (total 5 surveys). Anthropometric data and health information was collected on all children in these households at each survey point. The Nutrition Innovation Lab facilitated additional rounds of data collection during FY2013, which allow for an extension of the longitudinal panel relating to nutrition outcomes. Survey instruments were designed, tested and approved through the ethics review boards at Tufts and in Nepal. The data collection took place in the second quarter of 2013 without any hitches. Data entry and cleaning completed by May, with preliminary analysis initiated during the summer. At least one manuscript is planned for submission to a journal early in FY2014.

V.1.5 *Peri-urban diet and nutrition outcomes (panel survey)* **The goal is to assess measures of diet quality in relation to anemia outcomes, child growth and household food security in a panel of mother-infant pairs.**

The research focuses on improving the ability to better measure diet quality, and to link such measures to indicators of malnutrition among children and women. By validating tools such as dietary diversity indicators against measures of actual nutrient intake and biochemical status the goal is to enhance the ability of agriculture and nutritional intervention programs to measure the effects they are having on dietary consumption and malnutrition. Undertaken by Harvard School of Public Health with Nepal's Institute of Medicine and Bergen University in Norway, this work in Bhaktapur district specifically explores: 1) How indicators based on alternative food or food group classifications compare in explaining nutrient adequacy or status of women and children (controlling for socioeconomic factors)? 2) How one-time measures of dietary diversity predict adequacy of nutrients (particularly iron status) compare with multiple measures? 3) What are the benefits of correcting for intra-person variation in dietary diversity in this context? 4) To what extent does a dietary diversity score of maternal consumption in early childhood explain child growth? 5) What is the relationship between consumption of animal source foods and subsequent child growth?

These questions are pursued in the context of a cohort study of 500 mother-infant pairs. These pairs were originally surveyed in 2008, but the data were never analyzed or published. During FY2013, the preserved plasma and consumption data were analyzed for iron parameters and it was then possible to examine relationships between anemia, iron status, and dietary intake of

women and children. At the same time, analyses were pursued to the follow-up survey implemented in 2012 (on 319 of the original mother-infant pairs) to understanding how maternal diet during early childhood influences subsequent growth, and to better understand how changes in diet correlate with changes in anemia. That 319 of the original 500 pairs could be re-traced was a positive outcome (and another 30 or so pairs may still be added to the total in FY2014). There were no serious constraints to survey implementation and data analysis and paper writing was undertaken without delay. By the end of FY2013, a total of 5 paper drafts were prepared – 4 have already been submitted for publication, 1 more is close to final stage. They deal with the following topics: a) Iron deficiency is uncommon among lactating women in urban Nepal, despite high risk of inadequate iron intake, b) Maternal dietary diversity score and its relationship with maternal and child anthropometric status and anemia in Bhaktapur, Nepal, c) Prevalence of Inadequate Intake of Several Micronutrients is High among Lactating Women in Urban Nepal, d) Maternal and Infant Iron stores are correlated in Urban Nepal, and e) An assessment of Folate and Vitamin B12 status among healthy breastfed infants in Urban Nepal.

V.1.6 *Econometric analyses of secondary data linking ecology, food systems, and nutrition* **The initial goal is to measure the connections between agricultural capacity, technology adoption, nutrition outcomes, and conditioning factors at levels of aggregation ranging from household to district levels.**

This activity moved forward well during FY2013. A number of key datasets were fully merged by Purdue University into a 'master' database (including multiple rounds of the Nepal Living Standards survey (including the most recent 2011 NLSS), Nepal Demographic and Health Survey (DHS) data (which includes diet, health and nutrition information), remotely sensed satellite data covering the whole of Nepal from NASA's Global Inventory Monitoring and Modeling Systems (GIMMS) group, and a large dataset of agricultural market prices observed at monthly intervals in more than 45 Nepalese districts and 4 Indian border markets. Analytical efforts focused on a) making data available to other teams working with complementary primary data under the innovation lab's auspices, and b) generating research deliverables numerous analyses have been pursued, generating a pipeline of half a dozen research papers, some of which have been submitted and are now in peer review, and some of which are in working paper form. These papers include topics such as i) Agricultural Diversity and Child Stunting in Nepal, ii) Using Satellite Remote Sensing and Household Survey Data to Assess Human Health and Nutrition Response to Environmental Change, iii) Roads, market access and poverty: the case of the Chepang community in Nepal, and iv) Does Environmental Variability Help to Explain Child Nutrition Outcomes? Evidence from DHS and Satellite Remotely-sensed Data in Nepal.

VI) Associate Award Research Project Reports

To date, no Associate Awards have been secured by the Nutrition Innovation Lab – Asia. Extensive interaction took place during Y3 with missions in Myanmar, Kyrgyzstan, Nepal, Bangladesh and Cambodia to explore the potential for Associate Awards. There is hope that at least some of these ideas will bear fruit in Y4 of the activity.

VII) Human and Institutional Capacity Development

VII.1.1 Training: The Nutrition Innovation Lab Asia continues to support Nepali academics and students for short term and long term support. Short term support can include short courses and

- *Short-Term*: A total of 14 individuals were trained in child health and nutrition topics through short-term support of the Nutrition Innovation Lab Asia. These included 5 women and 9 men. Types of training included nutrition research methods workshop held in Bangalore, India in January 2013 and the 20th International Congress on Nutrition in Granada, Spain.
- *Long –Term*: There are 2 men and 3 women in long-term training (PhD and Masters) at Tufts University, Johns Hopkins School of Public Health And Tuskegee University.

VII.1.2 Institutional Development: A key issue that has been consistently observed in Nepal is the lack of formal education in the realm of not only nutrition-agriculture but also in basic nutrition and dietetics. The Nutrition Innovation Lab Asia has been actively working on the ground in the area of institutional development, which is much needed within this area. More specifically:

- The Innovation Lab has been supporting the development of the curriculum for a MPH/MS degree in nutrition at the Institute of Medicine (Tribhuvan University)
- It has made commitment to train faculty at the Institute of Medicine and the Patan Academy of Medical Sciences in the development and implementation of a short 2 week nutrition research methods training course for students and academics in Nepal, very similar to the course being implemented by St Johns Medical College in Bangalore (BBNC).
- The Innovation Lab has been supporting the Ministry of Health and Population's Child Health Division in its strategic planning for a national nutrition surveillance system (supporting meetings, sharing best practice publications, interacting on an ongoing basis with ministry staff).
- Institutional development has taken place among local non-governmental organizations in a variety of ways, including making formal presentations on methods, training support for their technical staff, and on-going interaction with, for example, the M&E professionals within the Nepal-based offices of Save the Children, Helen Keller International, Winrock, and IDE, that are key to the effective management of various kinds of USAID-supported development activities across Nepal.
- The Innovation Lab is actively engaging researchers from the Institute of Medicine and the Nepal Agricultural Research Council in the ongoing data collection activities
- The Innovation Lab has supported the training of local NGO staff (enumerators and Data collectors) in the area of nutrition, health and agriculture.
- The Innovation lab's management entity and partners have allocated not inconsiderable effort to providing technical support to key US-based partners, such as SPRING and FANTA III by supporting their training and knowledge dissemination activities that seek to build capacity within USAID and its partner organizations to better implement, measure and learn from Feed the Future and other federal strategies for international development.
- Innovation lab staff also work closely with local consortia that promote nutrition actions and facilitate discussion of donor and government-led activities such as the Nepal Nutrition Foundation, the donor-coordination group (Nepal Nutrition Group), UN-body

coordinating mechanisms such as REACH and the emergency nutrition cluster (housed in UNICEF), and the staff of the Social Sector of the National Planning Commission. Envisioning, planning, helping facilitate or simply attending meetings of these various professional affinity groups takes considerable time and effort that is justified by in innovation lab's growing credibility and leadership in research, dissemination of best practice and training in Nepal.

VIII) Technology Transfer and Scaling Partnerships

Unlike other Innovations Labs, which focus on generating new varieties of seeds, techniques for pest control or tools for market analyses, the Nutrition Lab's main intellectual property relates to dissemination of research findings that directly impact policy and program design, and the methods of implementing both.

IX) Governance and Management Entity Activities

The management entity tasks for Year 3 of the program were implemented smoothly by Tufts. Research and training funds were effectively disbursed among the many partners, leaving *no carryover* at the end of FY13. It should be reiterated that synergies and cost-savings accruing to having a single Management Entity for both Nutrition Innovation Labs have been substantial thanks to sharing of ideas among multiple partners.

As planned for in the Y3 workplan, the Management Entity (ME) was able to:

- Host one Board of Directors and one Technical Advisory Committee (TAC) Meeting in April 2013. This occurred following the metrics workshop (see below). The TAC focused on examining the direction of the Nutrition Innovation Lab Asia and Africa's research agenda (as described earlier) while the Board of Directors (BOD) focused on the processes of implementation. Policy decisions aimed at more transparency and enhanced guidance for all stakeholders were discussed and formalized by the Board of Directors. Specifically, we reviewed new Student Recruitment Guidelines. Once reviewed, the Board voted to approve them. We talked about the student recruitment process and the requirements that USAID has when an institution accepts a student for training in the US. Because this can be a confusing process, we have the process outlined and posted on the Innovation Lab website. Discussed the idea to create a template for researchers to propose research that would add-on to the original Innovation Lab programs.
- The Nepal specific Technical Advisory Committee (N-TAC) met once in Y3.
- In Y3, the Nutrition Innovation Lab Asia ME has focused on streamlining contracting and reporting of partners and has been better able to work with Nepal-based partners (such as NTAG and HKI) on reporting and administration.
- The Nutrition Innovation Lab website has been restructured and enhanced. Individual webpages are now available for Asia and Africa. Key reports, briefing papers and presentations are regularly uploaded on the website.

In addition to the governance and management activities, key events were hosted by the Nutrition Innovation Lab Asia in 3 global scientific meetings:

- Metrics Workshop: The Nutrition Innovation Lab Asia along with the Nutrition Innovation Lab Africa hosted the 2nd metrics workshop in April 2013 as a satellite to the Experimental Biology meetings in Boston. Attendees included representatives from LCIRAH, FAO, USAID Washington DC (BFS, Global Health), core partners (Johns Hopkins, Purdue, Tuskegee, Harvard School of Public Health) and other University partners (UK). There were five overarching themes, which emerged from the formal presentations and discussions. These include:
  - Data Revolution: need for improved data quality and standardization of data collection methodologies
  - Relevant Indicators: Identification of the most relevant indicators
  - Use of the generated evidence and need for advocacy
  - Focus on study design and methodology in the evaluation of multi-sector policy and programming
  - Elucidating the theory and logic of transmission mechanisms and acknowledging the complexity of the relationship of agriculture, nutrition and health.

- A special session at the 20th International Congress on Nutrition: The 20th International Congress of Nutrition was held from September 16-21, 2013 in Granada, Spain. As part of the satellite sessions to the symposium, the Nutrition Innovation Lab for Asia and Africa co-jointly organized a symposium titled "Research in Nutrition, Health and Agriculture". The aim of the session was introduce the Nutrition Innovation Laboratory activities to the larger nutrition community. Attended by about 70-80 participants, the symposium included opening remarks by Dr. Tirtha Raj Burlakoti, Chief Specialist, Policy, Planning and International Cooperation Division, MoHP and a key note address by Mr. Raj Kumar Pokharel, Chief, District Health Office, DoHS/MoHP, Illam, Nepal. In addition, Professors Patrick Webb and Jeffrey Griffiths presented on issues around linking agriculture- health and nutrition with Professor Webb's presentation focusing on framing the research questions of within the realm emphasizing the need for rigorous empirical evidence to confirm the linkages across the three areas while Professor Griffiths presentation laid out emerging areas including environmental enteropathy, mycotoxins and livestock microbiome. Following the laying out of the research agenda, Drs. Klemm and Ghosh presented on the design and preliminary findings around the PoSHAN study in Nepal (a community and institutional panel survey) and Dr. Ghosh presented on some preliminary findings on the first household panel survey in Uganda. The session was attended by academics especially from Asia and Africa and USAID and USDA staff as well as five members of a Nepali delegation to the Congress. Of the Nepali delegation, three were funded by the Nutrition Innovation Lab within the context of capacity building and two were supported by UNIC F. The session generated significant discussion around the importance of food based approaches in addressing nutrition issues.

- The Nutrition Innovation Lab Asia and Africa and Tufts University presented in the CGIAR (Consultative Group on International Agricultural Research) Science Forum 2013. Held in

Bonn from Sept 23-25, 2013, the biennial forum brought together scientists, practitioners, experts and thought leaders in order to understand the challenges and advances in the areas of nutrition, agriculture and health. The theme of Science Forum 2013 was "Nutrition and health outcomes: targets for agricultural research". The aim was to agree on research needs and identify new approaches and partnerships through which the agricultural community especially the CGIAR community could add value to the delivery of nutrition and health. Professor Patrick Webb delivered the keynote lecture of the Forum titled "Agriculture and nutrition: What do we know now and what do we still need to know". The Nutrition Innovation Lab was represented in two more sessions, with Professor Webb presenting on preliminary findings of the PoSHAN process research in Nepal around the coordination of service delivery and incentives and disincentives for collaboration across multiple sectors in the session " Policy and Institutional Approaches" and Dr. Ghosh presented a case study titled "Studying effectiveness: considerations in research design and implementation" in a plenary session focused on " valuating Nutrition and Health Outcomes". In addition, Professor William Masters organized as well as presented a session on "Farm Size, Urbanization and Links from Agriculture to Health and Nutrition". Significant interest was generated by all four presentations with several researchers, scientists, students and development partners following up with individual researchers for advice and collaboration.

- 2nd Annual Scientific Symposium in Kathmandu, Nepal was successfully organized by core partner Johns Hopkins in collaboration with local academic partners. This second event was larger (more participants, more abstracts submitted and papers presented), and generated even more attention among Nepali professionals and students than the first. Details of the symposium are presented in a news story in Appendix 3.

The Nutrition Innovation Lab was represented in more than 5 USG agency focused events including 2 Innovation Council meetings in Tanzania and Ghana, 1 USAID Special event in Washington DC, BIFAD and Innovation Council Meetings in Des Moines, Iowa. Several other events, conferences and fora were used by the Nutrition Innovation Lab Asia for the presentation and dissemination of research and capacity building activities. A list of events, presentations and the numbers reached are provided in Appendix 2.

The Management Entity has also continued to play an important role in representing core partners at meetings in Des Moines, Washington DC, London and Bonn, and in organizing partner participation in key meetings where they can engage directly with donors or researchers interested in this Lab's domain of work.

X) Other Topics (impact assessment, gender initiatives)

Not applicable

XI) Issues (financial, management, regulatory)

In Year 3, the Management Entity was able to award more than 56 percent of the total Nutrition Innovation award to direct work in Nepal. Again, as in past years, the majority of the labor of the ME, is allocated to cost share and is not part of the main labor budget. Key positions such as the Associate Director, Program Manager, and a majority of the Programs Director's salary is taken as cost share. The majority of the funds were given to our partners to be used toward capacity building and research in-country. Some of the other major expenses were dedicated to costs associated with promoting and disseminating Nutrition Innovation Lab research results such as the workshop the ME sponsored at the Nutrition Congress in Spain and the Metrics Workshop in conjunction with the Experimental Biology Conference. This year we sponsored the start of a Nepal student to begin her PhD program in Food and Applied Nutrition, we supported six students from Nepal to attend the research workshop in India, hosted training and workshops, and conducted numerous presentations.

XII) Future Directions

The elements of primary data collection will be replicated in Y4, serving to build rich longitudinal panels that will directly inform core aspects of Feed the Future's agenda. Furthermore, important analysis of secondary datasets is underway (led by Purdue University in collaboration with NASA) dealing with national level patterns and trends of agricultural productivity, climate change and health/nutrition outcomes. All aspects of these innovative research activities have had high global visibility through presentations in major academic and policy meetings, leading to continued requests for collaboration, extension of research add-ons (such as aflatoxin, microbiome, aquaculture and horticulture work with new partners).

Efforts will continue to be made to a) secure funds from the USAID mission in Nepal to support a few of the nutrition innovation lab activities in that country, potentially including the next (3rd annual) Scientific Symposium in Kathmandu in 2014 and additional training slots for Nepali faculty to attend the Bangalore-Boston Nutrition Collaborative training on advance public health nutrition research methods (with a view to gradually building capacity to replicate such trainings within Nepal). There is possibility of linking research of the innovation lab to upcoming activities to be supported under Title II programming of the Office of Food for Peace. Those opportunities will be explored. Effort will also be applied to seeking possible Associate Awards from other country missions in the region.

Appendix 1: List of awards to U.S. universities

1. *Johns Hopkins University*: PoSHAN Community Research (includes local partners, Institute of Medicine, Nepal Agriculture Research Council, New Era and Nepali Technical Assistance Group), 2012 - 2015, $419,726 in Y3 1,528,667 total)

2. *Harvard University: (*includes local partner Institute of Medicine), Mother-Infant Pair Follow Up, 2012 – 2014, $75,000 in Y3 ($275,683 total)

3. *Purdue University:* Understand and measure the connections between agricultural capacity, technology adoption, nutrition outcomes, and conditioning factors at levels of aggregation ranging from household to district level. $74,247 in Y3 ($235,449 total)

4. *Tuskegee University:* $2,500 in Y3 ($88,072 in total)

Appendix 2: List of presentations made on Nutrition Innovation Lab – Asia research activities

Presenter	Event	Place	Title	Date	Size of Audience
Webb, P	2nd Scientific Symposium, Kathmandu, Nepal	Kathmandu, Nepal	Keynote address: Nutrition specific and nutrition sensitive actions – the evidence base for action	Aug-13	250
Webb, P	American Agricultural Economists Assoc., Washington, DC	Washington D.C.	Impacts of Agriculture on Nutrition: Nature of Evidence and Research Gaps	Aug-13	75
Webb, P	AusAID seminar for donors, government in Dili, Timor Leste	Dili, Timor Leste	Linking food security and nutrition: policy options and issues	Apr-13	40
Webb, P	BIFAD annual board meeting	Des Moines, Iowa	Research priorities on agriculture to nutrition linkages	Oct-12	120
Webb, P	Child Health Division, Ministry of Health of Nepal, KTM	Kathmandu, Nepal	Summary of Nutrition Innovation Lab's work in Nepal (to government and other stakeholder partners)	Aug-13	25
Webb, P	Gates meeting at Rockefeller Centre, Bellagio, Italy	Bellagio, Italy	Information needs for assessing multi-sectoral actions at policy level	Nov-13	50
Webb, P	HKI country staff, Lalitpur, Nepal	Kathmandu, Nepal	Research priorities for programs linking agriculture with nutrition and health	Jan-13	12
Webb, P	International Congress on Nutrition, Spain	Granada, Spain	Nutrition Innovation Research: Framing the Questions	Sep-13	60
Webb, P	Nepal Nutrition Foundation, KTM	Kathmandu, Nepal	Lancet series 2013 findings and implications for nutrition policy	Aug-13	8
Webb, P	OXFAM senior staff seminar, Boston MA	Boston, MA	Bridging the divide between agriculture and nutrition – relevance to OXFAM's 'Grow' campaign	Feb-13	40
Webb, P	Science Forum of the CGIAR Science Council, Bonn, Germany	Bonn, Germany	Agriculture and Nutrition: What do we know, and what do we still need to know?	Sep-13	200
Webb, P	Science Forum of the CGIAR Science Council, Bonn, Germany	Bonn, Germany	Nutrition Governance: Innovation lab process research in Nepal and Uganda	Sep-13	35
Webb, P	Training session for survey teams, Shaligram Hotel, Nepal	Kathmandu, Nepal	Measuring public health and nutrition challenges linked to changes in agriculture	Jan-13	25
Webb, P	Tufts-SPRING senior leadership meeting, Boston	Boston, MA	Presentation of innovation lab research focus, methods and approaches	Sep-13	3

Presenter	Event	Place	Title	Date	Size of Audience
Webb, P	USAID 'Innovations in Research & Technology' meeting	Des Moines, Iowa	Linking nutrition specific with nutrition sensitive actions, and innovations in research to assess synergies	Oct-13	80
Webb, P	USAID special event, Washington, D.C.	Washington D.C.	Linking Agriculture, Nutrition, and Health: Updates from the Feed the Future Nutrition Innovation Labs	Aug-13	120
Webb, P	USAID/SPRING – Asia GLEE, Bangkok	Bangkok, Thailand	Keynote on pathways from agriculture to nutrition: evidence and gaps	Mar-13	130
Webb, P	USAID/SPRING Ag-Nut GLEE, Washington, DC	Washington D.C.	Working Together to Improve Nutritional Outcomes: Global Landscapes	Jun-13	150
Webb, P	USAID/Tufts Metrics Workshop, Boston	Boston, MA	Metrics for Evaluation and Monitoring of Agriculture-Nutrition Programs	Apr-13	80
Ghosh, S	1st Annual Meeting of the Innovation Council	Morogoro, Tanzania	Global Nutrition Innovation Lab Africa and Asia	Mar-13	200
Ghosh, S	1st Annual Meeting of the Innovation Council	Morogoro, Tanzania	Linking Health Nutrition and Agriculture	Mar-13	200
Ghosh, S	2nd Annual Meeting of the Innovation Council, Ghana	Accra, Ghana	Building Agriculture- Nutrition Linkages: Evidence Base	Jul-13	200
Ghosh, S	2nd Scientific Symposium, Kathmandu, Nepal	Kathmandu, Nepal	POSHAN Process studies: Concepts and Preliminary Findings	Aug-13	250
Ghosh, S	International Congress on Nutrition, Spain	Granada, Spain	Nutrition Innovation Lab Process research: Understanding processes that support nutrition program impacts	Sep-13	60
Ghosh, S	Science Forum of the CGIAR Science Council, Bonn, Germany	Bonn, Germany	Studying effectiveness: Considerations in research design and implementation	Sep-13	200
Ghosh, S	USAID special event	Washington, DC	Animal Source Protein and Stunting	Aug-13	120
Ghosh, S	USAID/Tufts Metrics Workshop	Boston, MA	Nutrition Innovation Lab Research Framework/Core Metrics	Apr-13	80
Groopman, J	2nd Annual Scientific Symposium	Kathmandu, Nepal	Prevalence of aflatoxin in mothers and young children in Nepal and Bangladesh: Implications for Assessment and public health	Aug-13	250
Klemm, R	2nd Annual Scientific Symposium	Kathmandu, Nepal	PoSHAN Community Studies: *Finding pathways to accelerate nutritional impacts*	Aug-13	250
Klemm, R	Board of Directors and TAG meeting	Boston, MA	Nutrition Innovation Lab RFA Activities	Apr-13	15
Klemm, R	International Congress on Nutrition, Spain	Granada, Spain	PoSHAN Community Studies: *Finding pathways to accelerate nutritional impacts*	Sep-13	60

Presenter	Event	Place	Title	Date	Size of Audience
Klemm, R	Johns Hopkins Faculty and Student Nutrition Seminar	Baltimore, MD	Farm to Fork: Leveraging agriculture for improved health and nutrition in Nepal	Sep-13	50
Klemm, R	Multisectoral Anemia Partners Meeting	Washington, DC	Frameworks for Anemia Programming for Women & Children: Unpacking Causal & Program Pathways	Oct-13	100
Manohar, S	3rd Annual LCIRAH Conference	London, England	Linking household food production, access and security with diet and nutritional status in Nepal: Design and methods of a national assessment (PoSHAN Community Studies)	Jun-13	95
Manohar, S	National Nutrition Surveillance Working Group	Kathmandu, Nepal	PoSHAN Community Studies: Design and Methods of a Surveillance and Sentinel System	Sep-13	20
Manohar, S	New ERA Training: Annual Panel Survey	Kathmandu, Nepal	The Nutrition Collaborative Research Support Program	Feb-13	102
Manohar, S	NTAG Partner Meeting	Kathmandu, Nepal	The Nutrition Collaborative Research Support Program: Updated Research Plan and Steps Forward	Nov-12	10
Manohar, S	NTAG Training: Sentinel Site Data Collection	Kathmandu, Nepal	Nutrition Innovation Lab & the PoSHAN Community Studies: An Introduction	Aug-13	35
Pokharel, R.K	International Congress on Nutrition, Spain	Granada, Spain	Addressing Nutrition through Integrated Policy in Nepal	Sep-13	60
Shrestha, R	2nd Annual Scientific Symposium	Kathmandu, Nepal	No rice in the house: risk factors and association with nutritional status of Nepalese 9-13 year olds.	Aug-13	250
West, K	2nd Annual Scientific Symposium	Kathmandu, Nepal	The Plasma Proteome: A New Potential Approach for Assessing Multiple Micronutrient Deficiencies	Aug-13	250
West, K	2nd Annual Scientific Symposium	Kathmandu, Nepal	Household Food Insecurity (HFI) and Infant Size in Rural Bangladesh	Aug-13	250

Appendix 3: Success Stories

NUTRITION INNOVATION LAB – ASIA
Annual Report (FY 2013) Success Story No.1

Roll out of nationwide data collection, despite challenging logistics

The Nutrition Innovation Labs seek to understand how investments in agriculture can achieve significant measurable impacts in nutrition, how best to design cost-effective multi-sectoral interventions based on agriculture, and how policy and program implementation processes can be enhanced to increase likely nutrition impacts of such interventions?

To answer these policy-relevant questions that have global significance, a nested set of studies is being supported across Nepal. These studies involve multiannual (and in some cases inter-seasonal) collection of data of many kinds, at individual, household and community levels, as well as from policymakers and field practitioners, in 24 locations randomly selected in the mountains, hills and plains of Nepal. Nutrition Innovation Lab partners (including Johns Hopkins University, Harvard University and Tufts University) have successfully established a world-class data collection platform that ensures use of innovative survey designs and instruments, ongoing institutional and human capacity building for quality nutrition research among half a dozen or more host-country institutions, and a flow of data that will support complex econometric, biological and policy analyses. The findings are anxiously awaited by Nepal's government, which has committed to a national multisector nutrition plan.

However, just reaching many remote locations is hard, due to imperfect infrastructure and some of the world's most imposing terrain. It is even harder to send teams of professionals to collect rigorous empirical information on farm output, diets, health history, nutrition outcomes, how services are provided by government field agents, how resources are allocated and used by local governments, and how national policies and investment patterns affect nutrition outcomes on the ground. During FY2013, the survey teams were faced with flooding in the plains regions and rock-blocking landslides in the mountains and hills. Mobile phone access was impaired during the torrential rainy season, in-country flights were repeatedly grounded by bad visibility, and politically-oriented strikes hampered road transportation. Language lexicons, manual of operations, and local land measurement metrics had to be developed to ensure standardization of findings across dozens of ethnicities speaking dozens of different languages.

Nevertheless, the teams persevered and were able to collect date at the 24 sites from around 4,500 households, more than 5,750 children under five, and roughly 750 policymakers and practitioners. Additionally, blood samples to assess haemoglobin levels were taken on almost 2,000 mothers and children. Analyses are underway, findings are being shared and discussed with policymakers in Nepal and around the world. Quality of research does not have to be, and should never be compromised, if policy and investment decisions are to be truly evidence-based.

Photo credit: Swetha Manohar 2013

NUTRITION INNOVATION LAB – ASIA

Annual Report (FY 2013) Success Story No.2

(Photo credits: Rolf Klemm 2013)

Government buy-in to evidence-based policy dialogue on agriculture for nutrition

Research findings that sit on shelves have no real-world value. The Nutrition Innovation Labs therefore invest seriously in the time and effort needed to reach out to policymakers, donors, practitioners and other scholars to present and discuss findings of their research. The goal is to translate science into practice, while promoting excellent and rigor in research through close collaborations with local scientists and policymaking institutions.

As part of this Human and Institutional Capacity Development strategy, a two day scientific symposium entitled, “Science and Policy for Health, Agriculture, Nutrition and conomic Growth” was organized in Kathmandu during August 2013. Nepal’s Institute of Medicine and its National Agricultural Research Council were local co-hosts. The meeting focused on dissemination of research findings among professionals from all sectors concerned with agricultural, food security, health and nutrition sectors. More than 220 registered participants included 47 university students, as well as senior government officials. They were all actively engaged in discussing 18 oral presentations and 10 posters.

Formal feedback from participants indicated that 90% rated the symposium as ‘excellent’ or ‘good’. Students reported that they valued the exposure to “research findings from national and international experts and a forum to discuss agriculture – nutrition linkages”. Senior policymakers and donors welcomed a more central role in planning and organizing such symposia in the future—with a much larger audience of government decision-makers and program implementers as a goal.